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ETHNOMATHEMATICS: THE CONSTRUCTION OF PEDATI GEDE CIREBON AND THE POTENTIAL OF ITS INTEGRATION IN MATHEMATICS LEARNING

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Abstract

This study aims to reveal the mathematical activities in the construction of Pedati Gede Cirebon and the potential for its integration into mathematics learning through ethnomathematics exploration. This study follows a qualitative research method with a qualitative verification research design to obtain a clear picture of the relationship between the technology used and the mathematical activities. The data collection techniques include observation, interviews, and material review. Based on the data collected and analyzed, it was found that mathematical activities can be seen in several depictions of existing technology, especially in the construction of large wheels. The designer of Pedati Gede Cirebon hopes for a large mechanical advantage for energy efficiency when operating it. This mechanical advantage is closely related to the concept of comparison in junior high school mathematics learning, so it can be used as a context for learning the concept of comparison to make it more meaningful. Several other mathematical concepts in the mathematical activities and construction of Pedati Gede Cirebon are the concept of circles and linear equations. The circle is related to the pillars of the wheel as support, while the concept of linear equations is used in determining certain quantities in several sizes available in the construction of Pedati Gede Cirebon.

Keywords: Mathematical Activities, Ethnomatematics, Mathematical Concept, Construction of Pedati Gede Cirebon, Mathematics Learning.

INTRODUCTION

Mathematics is a science that is very important in everyday life. Mathematics is also defined as a human activity (Athar, 2012). On the other hand, every human being tries to create, based on his feelings and intentions. The results of human creation form culture, which can take the form of physical buildings and cultural values. Therefore, with the many examples of people's lives that uphold their cultural values and have applied mathematical concepts in their daily life activities, mathematics is an important element in human cultural activities. Mathematical concepts used in cultural activities became known as ethnomathematics (Abi, 2016) .

Ethnomathematics is mathematics applied by certain cultural groups, groups of workers or farmers, children from certain communities, professional classes and so on (Gerdes, 1994). Ethnomathematics includes mathematical ideas, thoughts and practices developed by all cultures (Barton, 2007; D'Ambrosio, 2001; Rosa et al., 2016). As previously explained, ethnomathematics recognizes the existence of different ways of doing mathematics in community activities (Faqih et al., 2021). Therefore, ethnomathematics is used as a bridge to connect the relationship between mathematics and culture.

Cirebon is a region in Indonesia that has many cultural heritages. The artifacts in Cirebon are still well preserved, ranging from palace buildings, transportation equipment, and musical

instruments, to important equipment of the time which is still neatly stored in several museums and archaeological sites in Cirebon. One of the interesting artifacts to research is the Pedati Gede which is a traditional means of transportation in Cirebon. Traditional means of transportation are usually made using materials originating from the natural environment as raw materials and are driven using human or animal power (Suranny, 2017). The Pedati Gede artifact is in South Pekalangan, Cirebon, known as Pedati Gede Pekalangan.

Figure 1. Pedati Gede Pekalangan Cirebon
(Source: (Nansha et al., 2021))

Figure 1, you can see the uniqueness of the construction of the big cart, which has a flat shape and dimensions that are unique in their structure. According to the folklore of the people of Cirebon, Prince Wapanjangsang or also known as Pangeran Cakrabuana was the designer of the Pekalangan Pedati Gede (Zulfah, 2018). Prince Wapanjangsang is one of the figures who prefers to spread Islam as a new religious teaching rather than inheriting the throne of the Hindu-Buddhist Pakuan Padjajaran Kingdom (Ma'mun & Safari, 2018). The Pedati Gede Cirebon is a means of transportation used by Prince Wapanjangsang to deliver the message of Islam to remote areas of the village.

The Gede Pedati was made large with the aim of being the center of attention when Prince Walalusang came and preached. Apart from that, this means of transportation is also useful for carrying materials and equipment needed when traveling. The wheel axles on this cart are made numerous and close together with the assumption that they will support the chassis so that it does not break easily and at the same time aim to be able to carry goods with a large capacity (Nansha et al., 2021). By calculation, the heaviest axle load (MST) of a transport vehicle for road conditions in Indonesia today is 10–12 tons (Bahri, 2011). Calculations in constructing the Pedati Gede Cirebon definitely require mathematical concepts, one of which is related to measuring angles, length and weight.

Figure 2. Pedati Gede Cirebon in 1930

Based on Figure 2, it can be seen that there is appropriate technology used through measurement patterns in the construction of Pedati Gede Cirebon (Nansha et al., 2021). This research only reveals the history of the construction of Pedati Gede with the history of the figure Prince Walalusang without revealing the form of construction which is connected to the mathematical concepts used. In fact, this exploration is important to be able to explain how to apply mathematical concepts which at that time were not widely known or even previously unknown. Disclosure about the construction of Pedati Gede Cirebon which uses mathematical concepts in its construction can be done by conducting ethnomathematics exploration. Then the results of the exploration of one form of culture will help provide a depiction of mathematical concepts in schools. One way is by developing teaching materials that are developed based on students' daily culture (Anggara, 2019; Fitriyah & Syafi, 2022) This needs to be done because a person's mathematical thinking activities are influenced by the social context and also influenced by cultural and environmental aspects (Aminah et al., 2018; Faqih et al., 2021; Susilawati et al., 2021).

In addition, mathematics needs to be studied in a life context that is meaningful and relevant for students, including culture and students' daily lives (Kusmawan et al., 2018; Sucipto, 2010). Therefore, it can be said that customs, knowledge, understanding and insights inherited from culture as human behavior in the life of society have quite an important role in the development of students' level of thinking in mathematics. Ethnomathematics exploration can be used as a bridge in connecting mathematical concepts with culture.

Several studies related to ethnomathematics exploration of the various cultures of the Cirebon community have been carried out. Most of the exploration is found in Cirebon Trusmi Batik which is linked to learning geometric concepts (Arwanto, 2017; Karimah et al., 2021; Wulandari et al., 2022). Then, another ethnomathematics study related to geometric concepts can be seen in the Kaliwadas Cirebon sacred well (Noto et al., 2018). The studies that have been developed up to this point do not explain in detail the potential for integrating various cultures into the mathematical thinking process. Several questions relating to whether mathematical concepts were used in these cultural heritages still lack sufficient data. The study on the Pedati Gede Cirebon is expected to reveal how mathematical thinking concepts are used in the construction of the Pedati Gede Cirebon.

This ethnomathematics research aims to reveal the mathematical activities in the construction of Pedati Gede Cirebon and the potential for its integration into mathematics learning.

METHOD

The research method used is a qualitative research method. This research uses observation research techniques, interviews and material review. Observational research techniques were used with the aim of obtaining data related to the philosophical construction of Pedati Gede Cirebon which is related to mathematical activities related to appropriate technology contained in its construction. Interviews are used to reveal the philosophical relationship between the forms of mathematical activity that might be used. Material assessment is used to carry out the measurement process of several parts or elements in Pedati Gede Cirebon.

The subjects of this research were several sources who were the caretakers of Pedati Gede and several Cirebon cultural figures. The research was conducted from May 2023 to August 2023. The data analysis used was a qualitative verification method, namely an inductive method for drawing conclusions where the data is used as a basis for concluding a general description of the state of the object of study (Hardiani & Putrawangsa, 2019). The data analysis procedure went through five stages, namely data tabulation, data reduction, data coding, data interpretation, and drawing conclusion. At the tabulation stage, data were collected based on several categories. Then at the data reduction stage, irrelevant data were discarded and data relevant to the research objectives were retained. Data coding was used to code the data that has been reduced. Then the interpretation stage was to find data trends that explain phenomena related to the research focus. Finally, the conclusions were drawn based on patterns of mathematical activity relevant to the research objectives.

RESULTS

The results of this study focus on some data that has been reduced from the data tabulation process. The data was reduced based on several categories relevant to the research objective, namely to reveal the mathematical activities contained in the construction of Pedati Gede Cirebon. The first category is a study of the history of constructing Pedati Gede Cirebon, the second is the meaning of construction and design of Pedati Gede Cirebon, and the third is the technology used in Pedati Gede Cirebon. The history of the construction of the Cirebon Pedati Gede was revealed by several sources, one of whom was the caretaker of the Pekalangan museum which is the place where the Cirebon Pedati Gede is preserved. The following excerpts from interviews with several research subjects reveal important facts related to the history of Pedati Gede Cirebon.

> Taryi, the Caretaker of Pedati Gede Cirebon:
> *"Pedati Gede Cirebon was constructed by Prince Walangsungsang or Prince Cakrabuana which was used as a means of transportation in spreading the Islamic religion from Jakarta to Surabaya. The large cart is thought to be constructed and used from the 1300s to the 1700s. In 1907, a big fire broke out in Pekalangan causing several parts of the cart to burn. The big cart was originally constructed with 12 wheels, but 2 pairs were burned and were difficult to assemble again. 1 pair at the front and 1 pair at the back. Then, the big cart was used to load building materials for the construction of the Sang Ciptarasa in 1480."*

Then, observations continued to be carried out by collecting data from several other subjects who knew about Pedati Gede, one of whom is a cultural figure from the Kasepuhan palace and the Kanoman palace in Cirebon. Exploration focused on the design and construction

of the Pedati Gede, especially with regard to its uniqueness regarding mathematical activities that could potentially be taken into consideration.

> Raden Haryanto, Cirebon Cultural Figure:
> *"The wheels on the big chart were made large enough so that they could carry heavy items because when Prince Cakrabuana preached Islam, the drum and many other stuffs were all brought together. Then, in the 1700s, the cart was used to load building materials for the construction of the Sang Ciptarasa mosque in Cirebon city. The goods carried were around 5-7 tons. With such large loads, a capable transportation was needed, so this big cart was the most suitable one to use at that time. It was also made big enough to attract people's attention so that it can attract people."*

Observations were also carried out on the entire Pedati Gede Cirebon construction through measurements of the important elements in the Pedati Gede. The construction of the unique wheel continues to be observed and measured to find the mathematical reasoning used as the basis for its construction. The following information presents data related to the construction of Pedati Gede Cirebon.

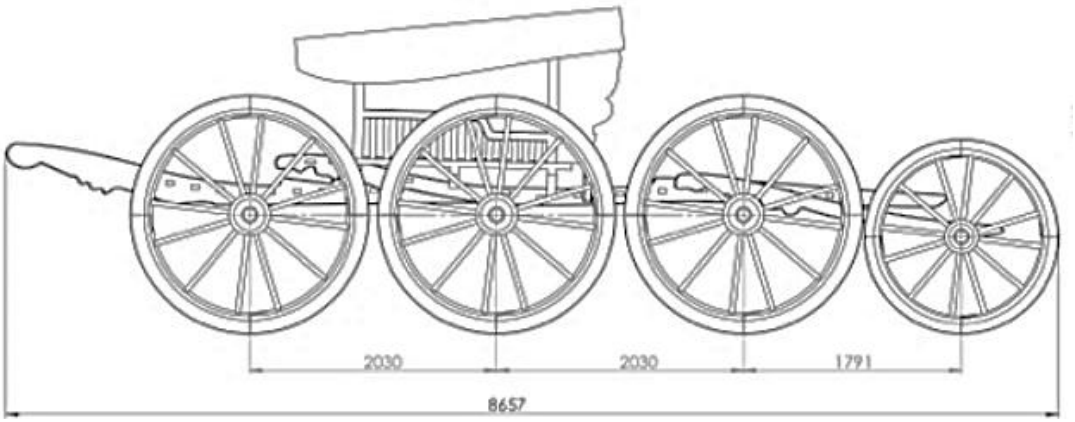


Figure 3. The construction of Pedati Gede Cirebon

Based on Figure 3 above, it can be seen that the overall length of the cart is 8,657 mm which is equivalent to 8,657 meters with the distance between each wheel axle ranging from 1,791 meters to 2.03 meters. The length of the rear part of the cart can also be determined by constructing the measurement results above in the form of a mathematical model. The position of the front wheel looks smaller than the three rear wheels which have the same diameter, and in the sketch, the front wheel looks like it is adjacent to the second wheel even though in its original form the two wheels do not touch each other because the front wheel chassis is smaller than the rear wheel as shown in the following image.

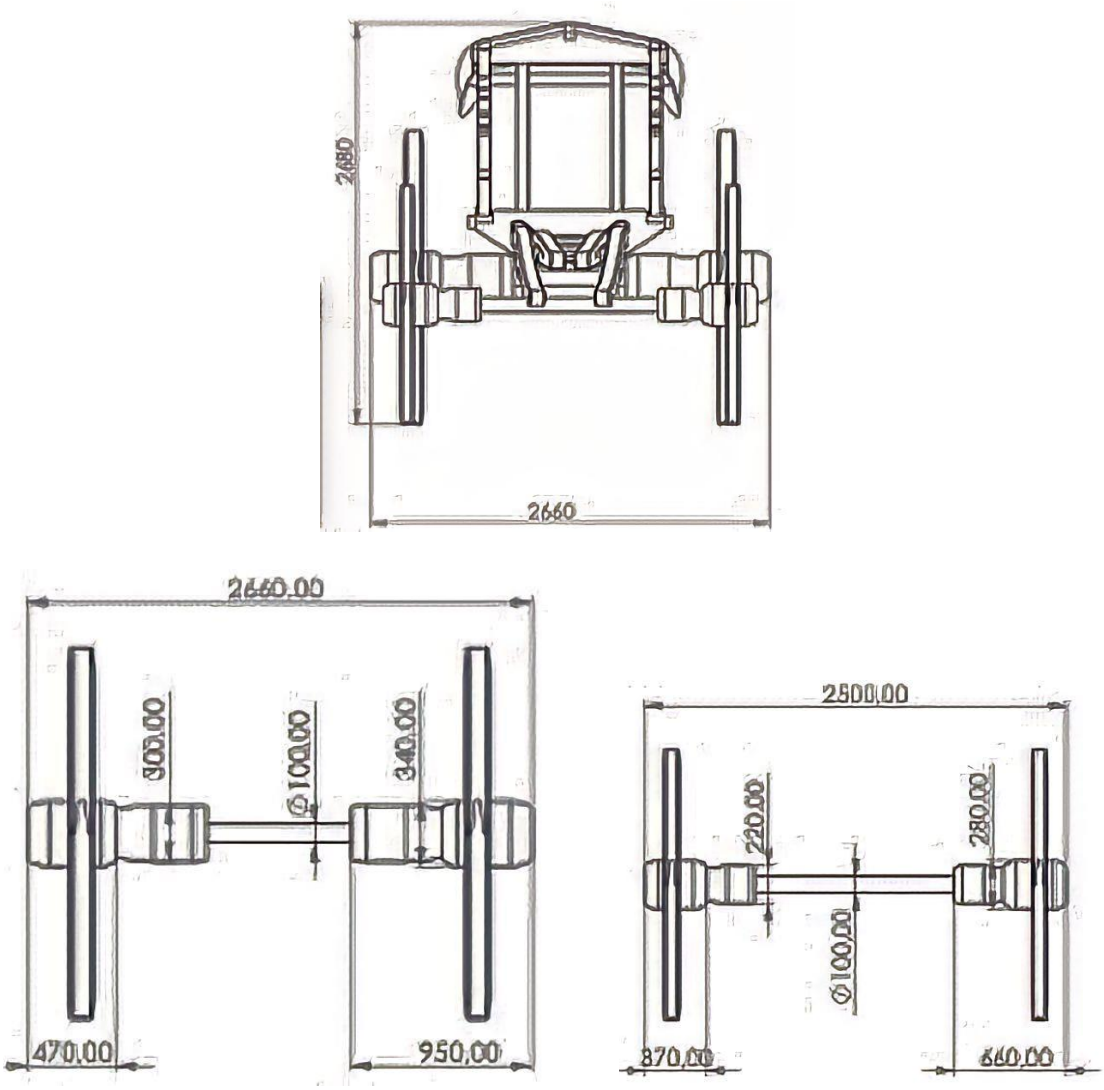


Figure 4. The Structure of the First Wheel Chassis Section with Three Other Wheels

Based on Figure 4, it can be seen that the positions of the first and second wheels are not close to each other. Each wheel is connected to a chassis measuring 2.5 meters for the first wheel and 2.66 meters for the next wheel chassis. The diameter of the chassis itself is 10 cm and the wheel axle structure is circular with a diameter of 22 cm for the front wheel and 30 cm for the next wheel. Meanwhile, the height of this cart is 2.68 meters, measured from the tip of the wheels to the tip of the cart roof. Then the wheel structure of both the front wheels and the three rear wheels is sketched in the following picture.

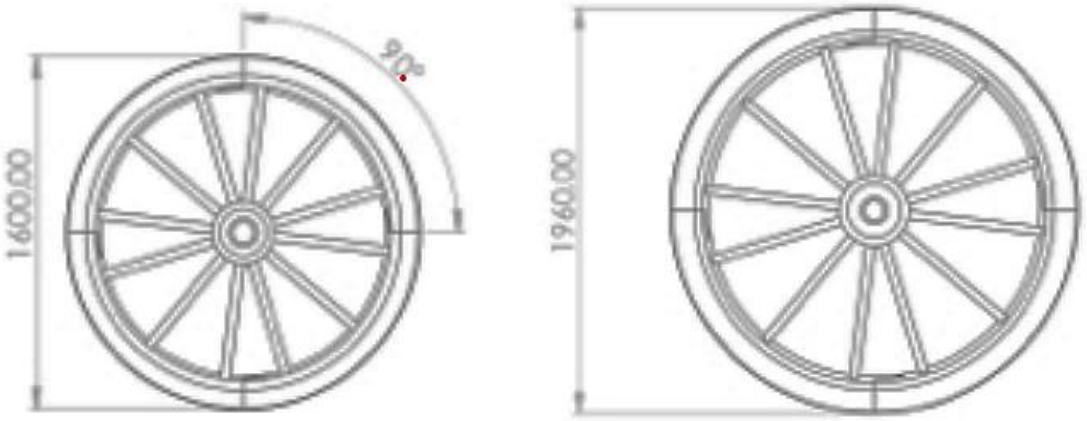


Figure 5. The Structure of The Front Wheels and Rear Wheels

Based on Figure 5, it can be seen that the diameters between the front wheels and the three rear wheels are in different sizes. The front wheels are slightly smaller, only 1.6 meters in diameter, while the rear wheels are 1.96 meters in diameter. These wheels are what people pay attention to when they see the Pedati Gede Cirebon which is made bigger and more numerous. Even before the fire in Pekalangan, this cart had 12 wheels, of which the wheels that could no longer be reconstructed were a pair of front wheels and a pair of rear wheels. If calculated from the front to the back end of the cart, it measures 12 meters. The entire structure of this cart is made of wood and is still sustainable today.

There are several interesting things to explore based on an interview with one of Cirebon's cultural figures who mentioned that:

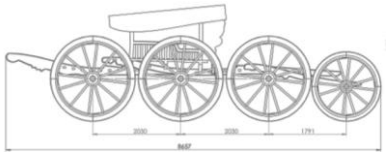
> Made Casta, Cirebon Cultural Figure:
> *"Pedati Gede is a monumental work that cannot be operated and is only a display. Probably the cart was constructed by Prince Walangsungsang in the transition from Hindu-Budhist to Islam."*

The information above is an interesting piece of data to study and is something that needs to be revealed through several literature studies. Pedati Gede Cirebon was reconstructed after it was burned and was rebuilt by Herman de Vost in 1993.

Figure 6. The reconstructed wheels in 1993

Based on Figure 6, it can be seen that there are differences in the color of the wood material on the cart. This is due to post-fire reconstruction where lighter wood was an additional element in 1993. Meanwhile, the darker wood tends to be blackish and comes from existing material from 1449. The new wood was used as a replacement for the damaged carriage elements and Difficult to reassemble. According to sources, Pedati Gede Cirebon did not use nails at all in its construction, the construction was designed by paying attention to comfort aspects, as seen from the front and rear chassis which are not rigid. To increase comfort, the wheel axle is made to rotate using resin as a lubricant. Apart from that, the connection from the spokes to the wheel rim is also designed to be sturdy, so it doesn't come off easily when used. Additional security can be seen in the use of several holes and pegs, allowing the cart to be knocked down as needed. This is what indicates the technological sophistication of its era which was the advantage of Pedati Gede Cirebon.

Table 1. The Integration of Mathematical Concepts

No.	The Construction Form of Pedati Gede Cirebon	Mathematical Activities	Mathematical Concepts
1.	Cart Wheels	Describes the shape of the radius connected from the center point to the line on the circle.	Circle
2.		Determine certain quantities from several known sizes using an algebraic concept approach. Determine certain quantities from several known sizes using an algebraic concept.	Linear Equations
3.	The relationship between the wheel and the central axle	The wheel and its central axle will have the same angular speed but the linear speed in proportion to the radius of the wheel will follow the equivalent ratio formula $\frac{V_A}{R_A} = \frac{V_B}{R_B}$	Comparison
4.	The relationship between angular speed among wheels	Front and rear wheels of different sizes will have the same linear speed when moving, but the angular speed between the two wheels is different. The angular speed of each wheel in proportion to the radius of the wheel will be following the inverse value ratio formula: $\frac{\omega_A}{R_B} = \frac{\omega_B}{R_A}$	Comparison
5.	Mechanical Advantages of Large Wheel Shapes	This is following the calculation of the amount of mechanical advantage, namely: $KM = \frac{R_{roda}}{R_{poros}}$	Comparison

The structure of Pedati Gede was also studied by several teachers and lecturers to get an idea of how it was integrated into mathematics learning. Based on the data collected, the Pedati Gede construction can be integrated into several mathematical concepts such as Table 1. Based on Table 1, it appears that several Pedati Gede Cirebon constructions are related to mathematical activities and can also be integrated into several mathematical concepts. Some of these discoveries have become a benchmark for researchers in preparing mathematics teaching materials based on the construction of Pedati Gede Cirebon.

DISCUSSION

The results in this research explain the mathematical activities in the construction of Pedati Gede Cirebon and the potential for their integration into mathematics learning. Based on the data collected in the previous section, the Pedati Gede Cirebon is a traditional form of transportation that has existed since the 14th century and was used as a vehicle for the prince of Walangsungsang to spread the teachings of the Islamic religion. This is in line with Nansha et al. (2021) in that the Pedati Gede Cirebon was a means of transportation for Prince Walangsungsang which was operated using buffalo and human assistance, considering that Prince Walangsungsang had a large number of followers. The Pedati Gede Cirebon is made in a large size and has many wheels. This is so that Pedati Gede Cirebon can transport all of the Prince's equipment for preaching Islamic teachings. Even Pedati Gede Cirebon is also able to transport drums that are large and have a large weight.

This finding is in line with Bahri (2011) and Nansha et al. (2021) in that there are many wheels and they are close together to support the chassis so that it does not break easily and can carry goods with a large capacity. This contains several mathematical activities, including the concept of comparison through the comparison between the wheel's radius and its axle, which is related to one of the physics concepts, namely mechanical advantage. Mechanical advantage has a strong influence on energy efficiency (Fatonah & Assingkily, 2020). This comes from an understanding that equipment with a high mechanical advantage will produce large results using the same or even less energy.

Another mathematical activity related to the construction of the Pedati Gede Cirebon is estimating the angular velocity and linear speed of the cartwheels. The amount of linear speed between the cartwheel and the axle is directly proportional to the radius of the wheel and the axle. This is following the concept of equal comparison. This value comparison concept is used as an estimation in determining the amount of linear speed that will be generated. This relationship can be used as a context in mathematics learning which will help students understand the concept of real and meaningful comparisons (Marsigit et al., 2014) a context that directs the emergence of stimulus for students to learn from forms or problems related to culture will provide opportunities and divert students' attention to solve the problems given (Aminah et al., 2018; Susilawati et al., 2021). The comparison concept is expected to develop student's learning potential.

Ethnomathematics as a study in uncovering the mathematical activities in the construction of Pedati Gede Cirebon produces several interesting facts and can create a more realistic concept. The mathematical activities carried out in the development of Pedati Gede Cirebon cannot be separated from its origins where the Pedati Gede Cirebon was made and is still preserved in Pekalangan, and in fact, in ancient times Pekalangan was a place for people who had more abilities in development. This is supported by Nansha et al. (2020) that Pekalangan is the location of the Kalang community or skilled builders. Based on this, it was the local people who probably helped Prince Cakrabuana in assembling the Pedati Gede Cirebon.

Mathematics learning should be related to real life or students' daily activities. One of them is through studying the mathematical activities in the construction of Pedati Gede Cirebon, which will provide a holistic and futuristic application of mathematics. The potential for

integrating mathematical activities in the construction of Pedati Gede Cirebon in mathematics learning will help preserve and give confidence to students that their predecessors were thinkers who were able to create a sophisticated means of transportation and include appropriate technological developments for their time.

CONCLUSION

The Pedati Gede Cirebon construction contains several mathematical activities in terms of its construction which is made large with many wheels that are close to one another so that it can carry large and large loads. The relationship between the large diameter of the wheel and the axle strengthens the assumption that the designer expects a large mechanic can produce energy efficiency. The concept of mechanical advantage is included in mathematical activities, especially in the concept of comparison. Apart from that, other mathematical concepts that can potentially be integrated are the concept of circles and linear equations. The circle concept can be seen from the wheel structure which is supported by several elements which are spokes to provide strength to the wheel. Meanwhile, the concept of linear equations is related to certain quantities from several known sizes which are applied to the construction of Pedati Gede Cirebon.

Further research can be focused on a more in-depth analysis of mathematical activities in the construction of Pedati Gede Cirebon. In this context, research can explore the relationship between wheel, axle and transported load sizes using the concept of comparison. In addition, further exploration of the circular concept in wheel structures, particularly in relation to the application of elements such as spokes to provide strength to the wheel, could also be a focus of research. The integration of the concept of linear equations in relation to certain dimensions of the Pedati Gede Cirebon construction can also provide additional insight regarding the design and energy efficiency of the pedati.

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REFERENCES

Abi, A. M. (2016). Integrasi etnomatematika dalam kurikulum matematika sekolah. *JPMI (Jurnal Pendidikan Matematika Indonesia)*, *1*(1), 1–6. https://doi.org/10.26737/jpmi.v1i1.75

Aminah, M., Kusumah, Y. S., Suryadi, D., & Sumarmo, U. (2018). The effect of metacognitive teaching and mathematical prior knowledge on mathematical logical thinking ability and self-regulated learning. *International Journal of Instruction*, *11*(3), 45–62. https://doi.org/10.12973/iji.2018.1134a

Anggara, B. (2019). Desain pembelajaran matematika pada konsep dasar peluang berbasis kearifan lokal Indramayu. *JNPM (Jurnal Nasional Pendidikan Matematika)*, *3*(2), 223–237. https://doi.org/10.33603/jnpm.v3i2.2377

Arwanto, A. (2017). Eksplorasi etnomatematika batik trusmi cirebon untuk mengungkap nilai filosofi dan konsep matematis. *Phenomenon : Jurnal Pendidikan MIPA*, *7*(1), 40–49. https://doi.org/10.21580/phen.2017.7.1.1493

Athar, G. A. (2012). *Pengembangan pembelajaran matematika dengan pendekatan pendidikan matematika realistik (pmr) berbasis budaya cerita rakyat melayu riau pada kelas 3 sekolah dasar* [Thesis,Universitas Negeri Yogyakarta].

http://eprints.uny.ac.id/id/eprint/35047

Bahri, S. (2011). Identifikasi jenis dan berat kendaraan melalui jembatan timbang. *Jurnal Inersia*, *2*(2), 1–5. https://doi.org/10.33369/ijts.2.2.1-5

Barton, B. (2007). Making sense of ethnomathematics: ethnomathematics is making sense. In *Stepping Stones for the 21st Century* (pp. 225–255). Australia: Brill. https://doi.org/10.1163/9789087901509_014

D'Ambrosio, U. (2001). What is ethnomathematics, and how can it help children in schools? *Teaching Children Mathematics*, *7*(6), 308–310. https://doi.org/10.5951/tcm.7.6.0308

Faqih, A., Nurdiawan, O., & Setiawan, A. (2021). Pengembangan media pembelajaran multimedia interaktif alat masak tradisional berbasis etnomatematika. *Mosharafa: Jurnal Pendidikan Matematika*, *10*(2), 301–310. https://doi.org/10.31980/mosharafa.v10i2.876

Fatonah, S., & Assingkily, M. S. (2020). Quo vadis materi pesawat sederhana dalam pembelajaran ipa sekolah dasar di era disrupsi. *Edu Sains Jurnal Pendidikan Sains & Matematika*, *8*(1), 46–60. https://doi.org/10.23971/eds.v8i1.1899

Fitriyah, A. T., & Syafi, M. (2022). Etnomatematika pada bale lumbung sasak. *Mosharafa: Jurnal Pendidikan Matematika*, *11*(1), 1–12. https://doi.org/10.31980/mosharafa.v11i1.1050

Gerdes, P. (1994). Reflections on ethnomathematics. *For the Learning of Mathematics*, *14*(2), 19–22. https://eric.ed.gov/?id=EJ502146

Hardiani, N., & Putrawangsa, S. (2019). Etnomatematika: tradisi pengukuran masyarakat suku sasak dan potensi pengintegrasiannya dalam pembelajaran matematika. *AKSIOMA: Jurnal Program Studi Pendidikan Matematika*, *8*(1), 159–174. https://doi.org/10.24127/ajpm.v8i1.1814

Karimah, N. I., Kusuma, D. A., & Noto, M. S. (2021). Etnomatematika: analisis sistem geometri pada motif batik trusmi cirebon. *Euclid*, *8*(1), 16. https://doi.org/10.33603/e.v8i1.3690

Kusmawan, W., Turmudi, T., Juandi, D., & Sugilar, H. (2018). Meningkatkan kemampuan berpikir kreatif dan pemecahan masalah matematis siswa madrasah aliyah. *Jurnal Analisa*, *4*(1), 188–198. https://doi.org/10.15575/ja.v4i1.2839

Ma'mun, T. N., & Safari, R. A. O. (2018). *Cariyos walangsungsang: transliterasi dan terjemahan*. Jakarta: Perpustakaan Nasional Republik Indonesia. https://library.unissula.ac.id/opac/index.php?p=show_detail&id=59893

Marsigit, Condromukti, R., Setiana, D. S., & Hardiarti, S. (2014). Pengembangan pembelajaran matematika berbasis etnomatematika. *Prosiding Seminar Nasional Etnomatnesia*, 20–38. https://jurnal.ustjogja.ac.id/index.php/etnomatnesia/article/view/2291

Nansha, H., Sachari, A., & Sabana, S. (2021). Symbolic meaning of pedati gede pekalangan cirebon. *International Seminar on Innovation in Arts, Resonance of Technology and Science*, *2*(1), 1–9. https://conference.isi-ska.ac.id/index.php/iicacs/article/view/45

Noto, M. S., Firmasari, S., & Fatchurrohman, M. (2018). Etnomatematika pada sumur purbakala desa kaliwadas cirebon dan kaitannya dengan pembelajaran matematika di sekolah. *Jurnal Riset Pendidikan Matematika*, *5*(2), 201–210. https://doi.org/10.21831/jrpm.v5i2.15714

Rosa, M., Orey, D. C., Wiilfredo V, A., & Gavarrete, M. El. (2016). *Current and future perspectives of ethnomathematics as a program*. Springer Nature. https://doi.org/10.1007/978-3-319-30120-4

Sucipto, T. (2010). Eksistensi keraton do cirebon kajian persepsi masyarakat terhadap keraton-keraton di cirebon. *Patanjala : Jurnal Penelitian Sejarah Dan Budaya*, *2*(3), 472. https://doi.org/10.30959/patanjala.v2i3.240

Suranny, L. E. (2017). Moda transportasi tradisional jawa. *Jurnal Penelitian Arkeologi Papua Dan Papua Barat*, *8*(2), 217–231. https://doi.org/10.24832/papua.v8i2.189

Susilawati, W., Suryadi, D., & Dahlan, J. A. (2021). The improvement of mathematical spatial

visualization ability of student through cognitive conflict. *International Electronic Journal of Mathematics Education*, *12*(2), 155–166. https://doi.org/10.29333/iejme/607

Wulandari, D. A., Kusumah, Y. S., & Priatna, N. (2022). Eksplorasi nilai filosofis dan konseptual matematis pada bagunan keraton kasepuhan cirebon ditinjau dari aspek etnomatematika. *Jurnal Cendekia : Jurnal Pendidikan Matematika*, *6*(3), 2536–2551. https://doi.org/10.31004/cendekia.v6i3.1421

Zulfah, S. (2018). Islamisasi di cirebon: peran dan pengaruh walangsungsang perspektif naskah carios walangsungsang. *Jurnal Tamaddun : Jurnal Sejarah Dan Kebudayaan Islam*, *6*(1), 172–201. https://doi.org/10.24235/tamaddun.v6i1.3270